Claims

1. An apparatus (20) for reading data from and/or writing data onto an optical data carrier (21), said apparatus comprising an optical source for generating an incident beam (26), an objective lens assembly (28) for focusing said incident beam onto said optical data carrier, and a detection lens assembly for projecting a returning beam (30), which returns from said optical data carrier, onto an optical detection assembly (33) suitable for the generation of a tracking error signal, said detection lens assembly being a converging lens assembly (32) without substantial astigmatism.

2. An apparatus as claimed in claim 1, wherein said detection lens assembly consists of a thin convex lens (32).

3. An apparatus as claimed in claim 1, further comprising a beam splitter (31) for splitting said returning beam into a first branch (30a) which is projected through said detection lens assembly and a second branch (30b) which is projected onto a focus error detection assembly of said apparatus.

4. An apparatus as claimed in claim 1, further including a tracking error signal generator (39) for generating a tracking error signal (TES_n) which results from a difference between intensity signals corresponding to two cross-sectional portions of said returning beam.

5. An apparatus as claimed in claim 1, further including a tracking error signal generator (39) for generating a tracking error signal, wherein said optical detection assembly includes four photo-detectors (Q_1-Q_4) arranged as a quadrilateral, and said tracking error signal results from a difference between two signals which are each obtained by adding the intensity signal of two diagonally opposed photo-detectors.

6. A method of writing optically readable data onto an optical data carrier (3) having a recording layer (8), said method comprising the step of locally modifying said recording layer for forming binary marks (11), said binary marks being capable of causing a phase difference between reflected light (7a) which has interacted with said binary marks and reflected light (7b) which has interacted with the rest of the recording layer, an amplitude (d) of said local modification being selected so as to bring said phase difference within a range [140°, 220°].

7. A method as claimed in claim 6, wherein the amplitude (d) of said local modification is selected so as to bring said phase difference within a range [170°, 190°].

8. A method as claimed in claim 6, wherein said local modification relates to the thickness of said recording layer.

9. A method as claimed in claim 6, wherein said local modification relates to a phase change of the material of said recording layer.

10. An optical data carrier having a recording layer (8), which carries optically readable data in the form of binary marks (11) which are capable of causing a phase difference lying within a range [140°, 220°] between reflected light (7a) which has interacted with said binary marks and reflected light (7b) which has interacted with the rest of the recording layer.